CP316
Addressing Modes

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Program and Data Memory

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Constants reside in *program* memory.

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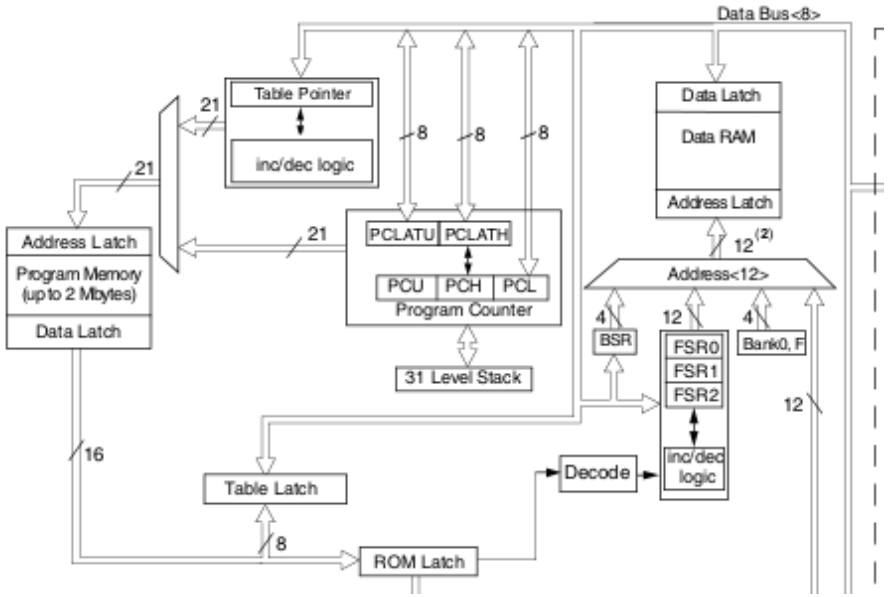
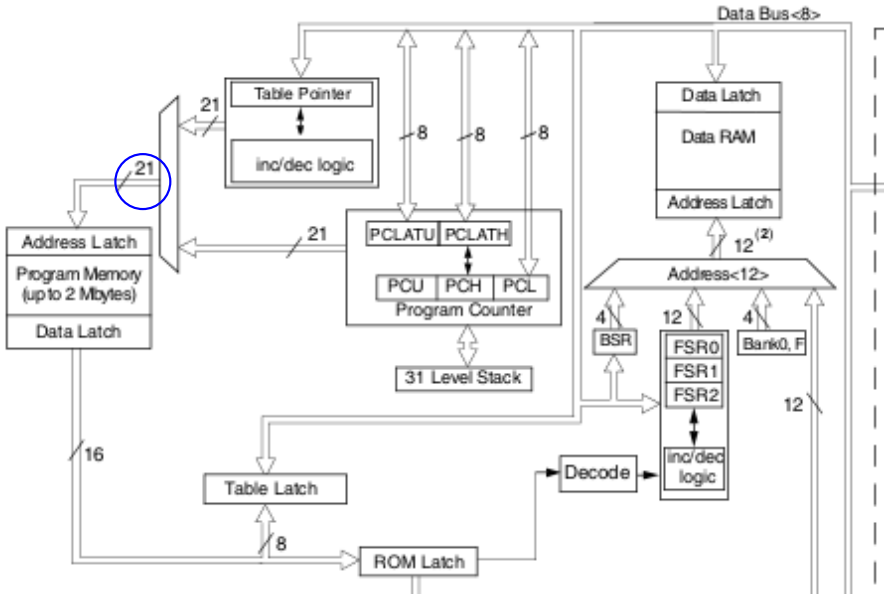
→ Chapter 4

Memory Registers



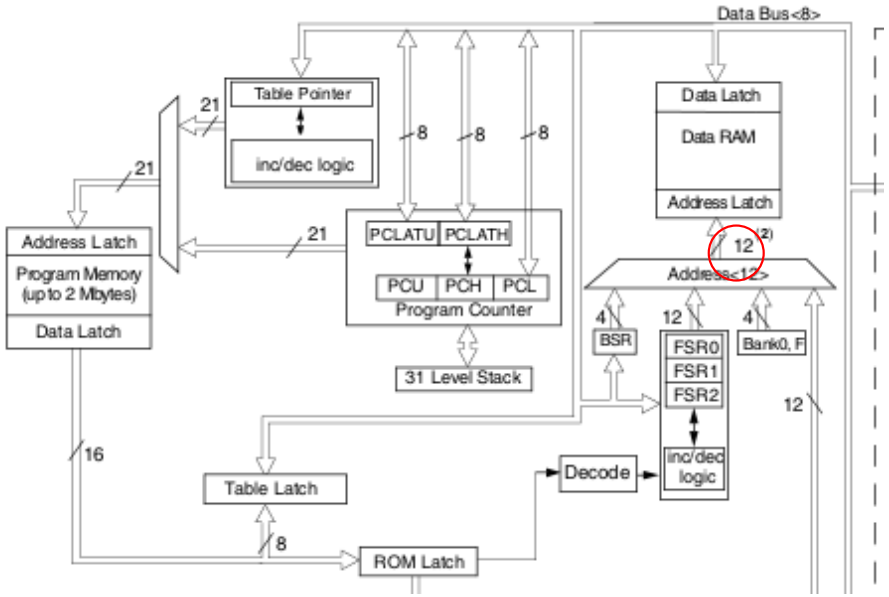
Internal registers for memory operations

Memory Registers



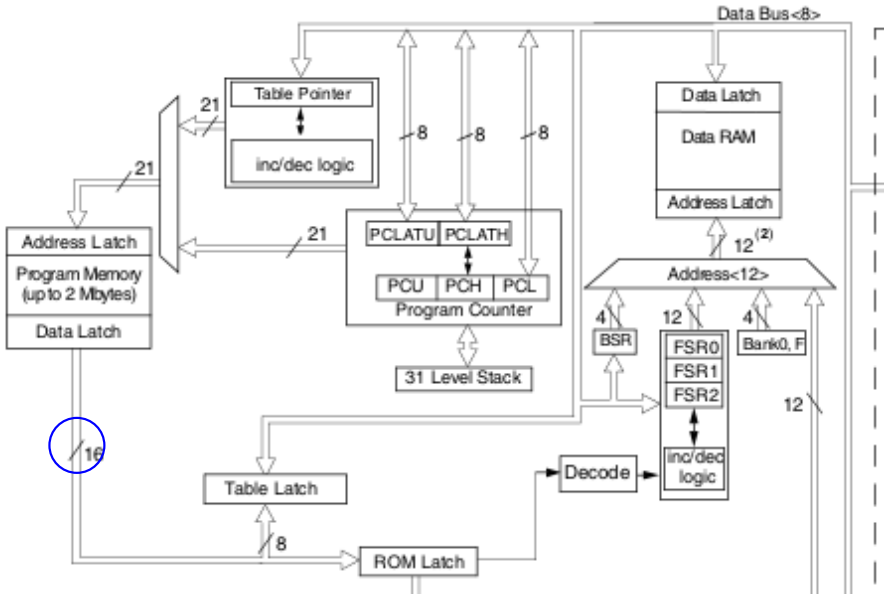
Program memory has **21** bit addresses.

Memory Registers



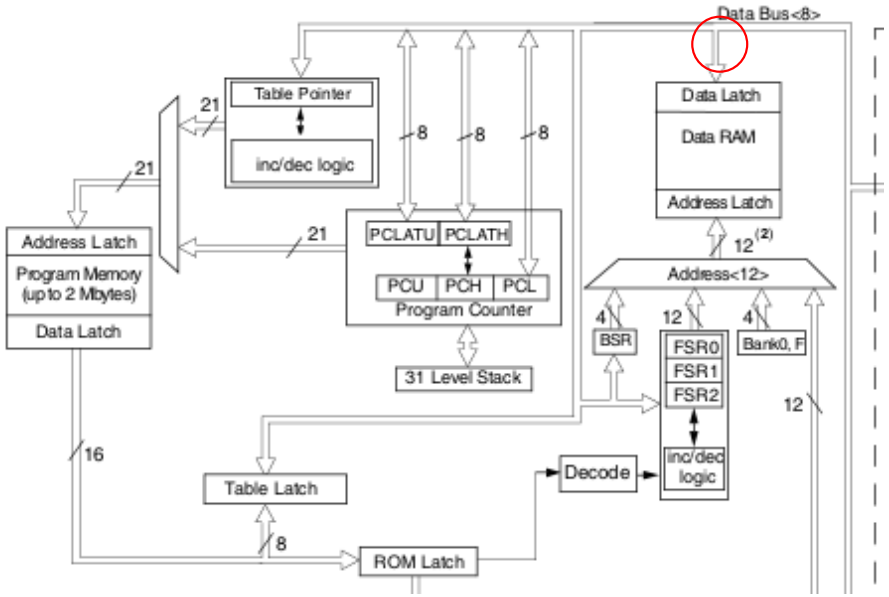
Data memory has **12** bit addresses.

Memory Registers



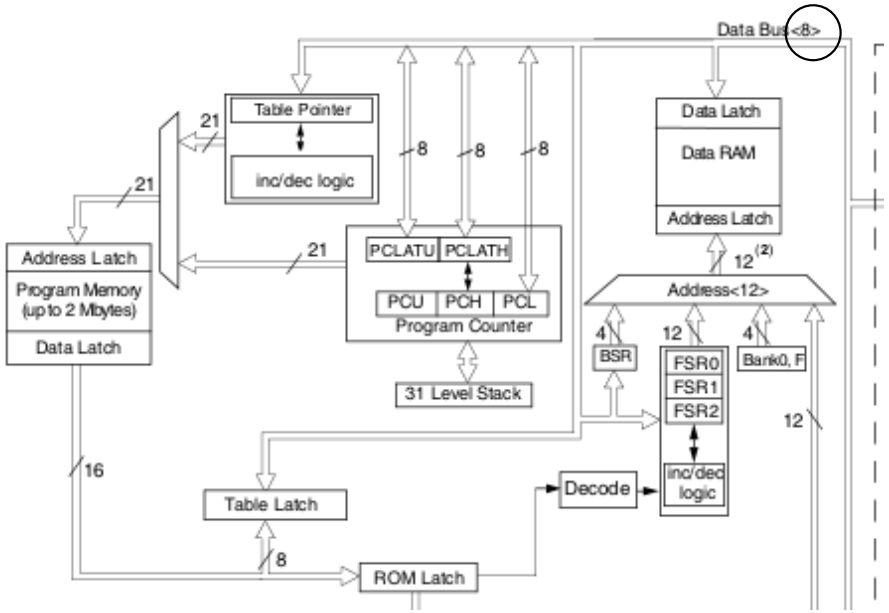
Program memory is **16** bits (2 bytes) wide.

Memory Registers



Data memory is **8** bits (1 byte) wide.

Memory Registers



The *internal data bus* is **8** bits (1 byte) wide.

Reading from Program Memory

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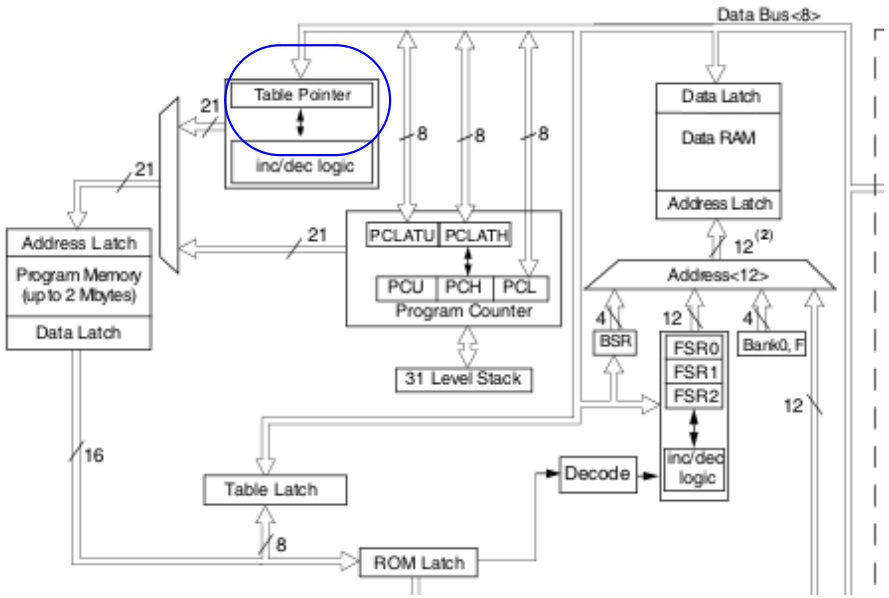
How often will **TBLPTRU** be something other than zero?

Program Memory Registers



TBLPTR

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Program memory is *byte-addressable*.

The two bytes of a single word will be found at consecutive addresses.

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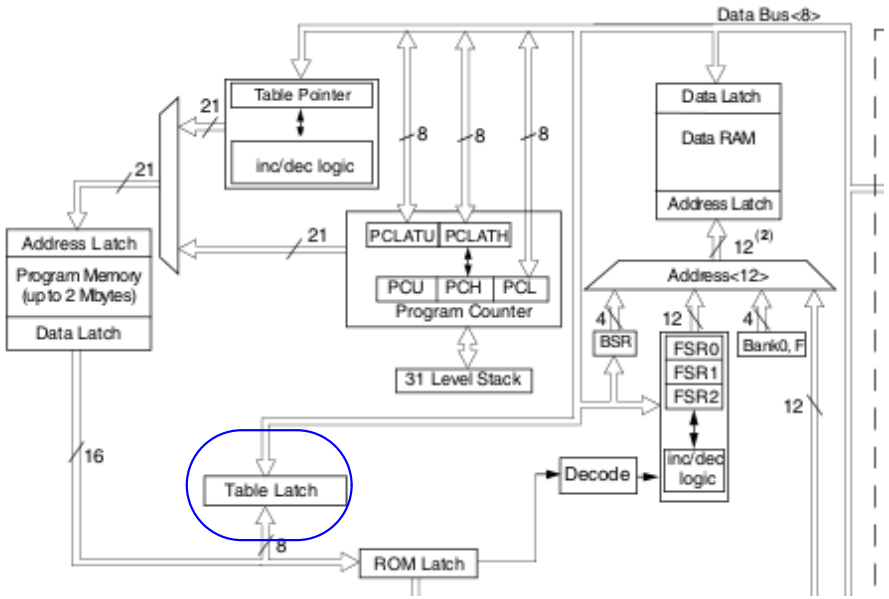

TABLAT gets the value from *tblrd∗*.

Program memory read sample code

Program memory read sample code

```
  movlw  upper stuff      ;upper (partial)
  movwf  TBLPTRU,A        ;in TBLPTR upper
  movlw  high stuff       ;get high byte
  movwf  TBLPTRH,A        ;in TBLPTR high
  movlw  lower stuff      ;get lower byte
  movwf  TBLPTRL,A        ;in TBLPTR lower

  tablrd*+                ;read byte, inc ptr
  movf   TABLAT,W         ;get byte in WREG
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;;; omitted code
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
stuff   db      0x00, 0x01, 0x03
```

tblrd∗ reads a byte into **TABLAT**.

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Why not just increment (or decrement) **TBPTRL** manually?

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Why not just increment (or decrement) **FSR0** manually?

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```
;;;  variables
          cblock   0x000
          NUM1
          NUM2
          endc
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;;;  omitted code
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

   lfsr   0, NUM1              ;get address in FSR0

   movf   INDF0,W              ;get byte in WREG
;  movf   POSTINC0,W           ;get byte, inc counter
;  movf   POSTDEC0,W           ;get byte, dec counter
```